

Australian National Botanic Gardens



Growing Native Plants

No. 4



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Billardiera scandens

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NATIVE GROUND COVERS

Although a short article on ground covers was presented in Issue No. 1 of *Growing Native Plants*, public inquiries have suggested that further information is required on this valuable aspect of landscaping.

Usually, insufficient thought is given to the selection of ground covers when setting out a landscape, so let us look at the factors which should be considered.

1. What spread is required?

Many times we have seen species used which are too vigorous for a situation and which have completely swamped the surrounding shrubs. Repeated pruning may overcome this excessive growth but it is easier to make the right choice at the outset.

Sometimes the reverse is true, and the ground is not sufficiently covered. This may be caused by either incorrect spacing or poor selection of species.

2. Are there trees in the area?

This question is important for two reasons. Firstly, if trees or shrubs are present, then care must be taken to select plants which don't climb into them — unless, of course, this overgrown effect is required. Secondly, if trees are present, they may afford shelter from frost for certain borderline species in colder districts. This gives the landscaper a wider choice.

3. What height is most desirable?

From a purely aesthetic point of view it adds interest to large expanses of ground covers to vary the height. The landscaper should not consider a ground cover to be essentially a prostrate plant. It may be 1.0–1.5 m tall but still hug the ground over a wide basal area and serve the purpose of a ground cover.

Again, from a more functional aspect, it may be desirable to use a taller species to hide an unsightly structure such as a septic tank or even to divert wind from a certain area.

4. What is the aspect?

This is an obvious question but one that is

sometimes forgotten. Some plants thrive in the full western sun, others prefer the shade of a southerly aspect.

5. Is frost a problem?

Those of us resident on the tablelands of New South Wales realise the importance of this question and considerable experience has been gained at the National Botanic Gardens in this regard. If the situation is exposed to severe frosts, the selection of species is limited.

If, in this article, a species is recorded as frost hardy, then it has withstood grass temperatures down to -7°C .

6. Is the drainage good?

With the ever-present danger of *Phytophthora cinnamomi* (root rot) attacking plants in ill-drained situations, this factor should be considered. If the drainage is poor, efforts should be made to improve it or plant selection should be limited to those species which have shown some resistance to the disease.

7. Is regular watering possible?

This is not a question for the home gardener, for whom watering usually presents no problems. However, in rural or municipal planting or even at the weekend, this is an important factor.

In this article it is proposed to consider a variety of sites and to select suitable native species for these. In so doing, the above seven factors will also be considered and it will be left to the landscaper to make the choice.

Sloping banks without trees or shrubs

The species mentioned in this section should not be used when trees or shrubs are in the areas, as they tend to become tangled in the branches rather than stay on the ground.

1. *Kennedia nigricans*

This very vigorous creeper from Western Australia has unusual black and yellow pea flowers and large, handsome deep green leaves. One plant will cover an area to a diameter of 7 m in a season if conditions are good. It is more frost hardy than most other *Kennedia* spp., although its foliage suffers some damage after heavy frosts in Canberra. Leaf damage may also be caused by snails, which should be controlled with the usual snail baits.

Propagation is by seed or cuttings taken in September. Seed should be scarified before sowing. Regular watering would be required for good growth.

2. *Kennedia macrophylla*

This rare Western Australian species is almost as vigorous as *K. nigricans* but has red flowers of the more conventional 'pea flower'



Hibbertia dentata

shape. Leaves are slightly smaller, paler and less glossy than the former species. Although protected by overhead trees at the National Botanic Gardens, severe frosts cause defoliation; however, plants recover in spring.

Propagation is by cutting or scarified seed. No pests have been noted for this species. Moderate watering is required for good growth.

3. *Kennedia rubicunda*

This eastern species is becoming well known in cultivation but is not as attractive as the two former species. The red flowers are similar in form to *K. nigricans*.

K. rubicunda is badly damaged by frost. It appears very unsightly by the end of winter, but usually it does not die.

The species will withstand drier conditions and will survive once established with little or no artificial watering under Canberra rainfall conditions (annual average: 660 mm).

It is moderately vigorous (3 m centres) and may be propagated from cuttings or scarified seed.

No pests have been recorded.

4. *Kennedia coccinea*

One of the most beautiful of the *Kennedia* spp., this species is native to south-western Australia, where it covers fallen logs and low trees and shrubs. Its flame red flowers are held

upright in spring and its dainty foliage is less robust than other species mentioned.

Its resistance to frost has not been fully tested, but some shelter is recommended in Canberra.

In bank planting the suggested spacings would be 1.5 m centres.

Moderate watering is required to maintain the species in good condition.

Propagation is from scarified seed or cuttings and no pests have been recorded.

5. *Hibbertia dentata*

This east coast species, although frost tender, is a delight in a sheltered situation or moderately frost-free area. Its yellow flowers, 5 cm in diameter, are well presented over a long period. Foliage is attractive and develops a purplish tint in the colder months.

In mass planting, plants should be spaced at 1 m centres, as the species is not as vigorous or densely growing as the *Kennedia* spp.

Propagation is from cuttings, but no information is yet available as to success from seed.

No pests have been recorded.

Moderate watering and good drainage are recommended for best growth.

6. *Billardiera scandens*

The genus *Billardiera* belongs to the *Pittosporum* family and includes a number of species useful as climbers or ground covers. *B. scandens* is an east coast species which is the most easily available, but by no means the most attractive. It has, however, the virtue of being frost resistant and hardy. It seems to accept a variety of conditions from dry to moderately damp and from full sun to almost full shade. It is not vigorous and should be planted at 50 cm centres for dense coverage.

The fruit is succulent and edible and propagation is easy from seed or cuttings. Germination may take up to 3 months.

The species appears to be pest free.

Sloping banks with some trees or shrubs or large open areas between shrubs

The species mentioned in this section all have a considerable spread, but tend to stay on the ground rather than become entwined in shrubs and low-hanging trees. Obviously, any of the plants described in this section would be suitable in the situations described previously.

1. *Kunzea pomifera*

This native of South Australia demands perfect drainage for good growth. The feathery white flowers, borne in late spring and early summer, are attractive and the shiny and stiff, small, round leaves make the plant an all-the-year favourite.

It is frost hardy and readily propagated from

cuttings. No details of propagation from seed are yet available.

Plants must be kept dry once established or death from root-rot will almost certainly occur.

Spacing at 1 m centres is recommended for massed planting.

2. *Grevillea biternata*

This Western Australian plant has become well established as a valuable ground cover for banks in exposed situations. Its white, perfumed flowers in spring hide the foliage, which is attractive in its own right.

Good drainage is essential and full sun encourages best flowering.

Propagation is easiest from cuttings, as seed is difficult to collect in any quantity.

The plant responds well to trimming, and if an occasional branch tends to grow vertically and this is considered undesirable, it may be cut off at the base.

No pests are apparent.

Spacing should be at 2 m centres.

3. *Grevillea laurifolia*

This red-flowered toothbrush grevillea comes from the Blue Mountains, New South Wales. In time, a single plant will cover an area over 6 m square; but the species is slow to start and usually requires a couple of seasons to settle down before a good growth is attained.

Propagation is easiest from cuttings taken in late summer.

It is frost hardy and does well in full sun.

The species is completely prostrate and has hybridised naturally with *G. acanthifolia* to give another desirable ground cover, *G. x gaudichaudii*, which seems to be faster growing than *G. laurifolia*, with more attractively shaped leaves but less dense habit.

Some attacks by mites have caused disfiguration of leaves, but this may be controlled by use of a miticide.

4. *Grevillea* 'Poorinda Royal Mantle'

This cultivar is a hybrid between *G. laurifolia* and *G. willisii*. It is extremely vigorous and will thrive in very harsh dry conditions. Flowers are pink to rose and of the toothbrush form.

Propagation must be from cuttings.

The plant is frost hardy and apparently pest free.

Plant at 3 m centres.

5. *Grevillea thelemanniana*

At least two forms of this species are in cultivation: a grey-leaved form with loosely growing, long, prostrate stems, and another, with pale green foliage, that is slightly more upright and generally more compact. The flower colour on the second form is paler red and does not show out as well as the former.

The grey-leaved form is the more desirable, but is definitely the more frost tender.



Phyla nodiflora

Grevillea laurifolia





Cassia odorata

Both grow easily from cuttings taken in summer and both benefit from good drainage. For dense coverage, it is desirable to space at 1 m centres.

No pests have been observed.

6. *Phyla nodiflora* (syn. *Lippia nodiflora*)

From the east coast sand-dunes comes this rapid-growing verbena-like plant with its small, pink flowers and bright green leaves.

It is a prolifically growing plant, rooting at the leaf nodes, and care should be taken that it is positioned away from garden beds where it is likely to become invasive.

It has been successfully used as a lawn and at the National Botanic Gardens has proved highly successful in bank stabilisation.

It is moderately frost hardy, although growth ceases in the winter months.

Propagation is most easily achieved by chopping up runners and planting as one would grass runners.

Water should be applied consistently during the warmer months.

7. *Neopaxia australasica* (syn. *Montia australasica*)

This is a plant which thrives in wet conditions and may in fact be grown as an aquatic.

It is useful as a soil binder, but in the colder areas tends to disappear below ground in the winter months. With bright green grass-like leaves and small, white, star-shaped flowers it is useful for around ornamental pools. It does tend to become invasive and care should be taken to isolate it from areas defined for annuals etc.

The grey-leaved alpine form of this species appears to be less invasive, but requires further testing before it can be recommended.

Propagation is by root division and plantlets may be positioned directly, provided adequate watering is carried out.

8. *Cassia odorata* (prostrate form)

A form of *Cassia odorata* from the South Coast, New South Wales, this cassia exhibits a completely prostrate habit, making it eminently suitable for ground cover work. Unlike many other cassias it has shown itself to be moderately frost hardy in Canberra and reasonably quick growing.

With masses of yellow flowers in late spring and early summer, it is an eye-catcher for a sunny situation. A plant will cover about 1.5 m in the first two growing seasons.

Propagation is from seed and the only observed pest is grubs in the seed pods.

9. *Kennedia prostrata*

Common right across the continent, this species is one of the few *Kennedia* spp. that stays on the ground.

It is frost tender and will only survive under shelter in Canberra.

Propagation is from scarified seed or cuttings.

It forms a tight mat and is fast growing in a sunny situation, although the red flowers are often hidden by the leaves.

Spacing at 2 m centres is suggested and no pests have been observed.

10. *Myoporum debile*

This inland species is sometimes found naturalised on coastal areas and is thought to have been introduced by cattle.

It is slightly frost tender in Canberra but recovers to flower through the summer and fruit in the autumn. Flowers are white or blue, and small, but the fruits are red to purple and quite showy.

Propagation is easy from cuttings, but little is known about germination from seed.

For a dense coverage, 1 m centres or less is the recommended spacing. No pests have been observed.

11. *Mentha diemenica*

Little has been done with our native mints in cultivation, but this species is worthy of trial.

Being native to the Australian Capital Territory it is frost hardy and thrives on ample watering.

Its blue flowers are borne in summer and propagation is from cuttings or root division.

Small plants should be placed at 50 cm centres. No pests have been noted.

12. *Hibbertia scandens*

This vigorous creeper of the east coast sand-dunes and forests will survive in Canberra only with winter covering. Its large, showy, yellow flowers are up to 7 cm in diameter and appear right through the warmer months.

Propagation is by cuttings or seed, which may take 8-10 weeks to germinate.

Some forms have a greater tendency to



Brachysema celsianum

climb.

A well-drained situation is required, but adequate watering is also necessary.

Plant at 1.5 m centres on the coast and 1 m centres under shelter inland.

No pests have been noted.

13. *Carpobrotus rossii*

There are a number of Australian succulent plants suitable for ground cover work in extremely dry areas, the genera *Carpobrotus* and *Disphyma* being outstanding.

C. rossii has purple flowers about 5 cm in diameter and can withstand grass temperatures to -7°C without damage.

Propagation is easy from cuttings, with roots appearing in 7–10 days. Suitable spacing would be 1.0–1.5 m.

Snails should be guarded against with the recommended baits.

Areas where some height is required in a ground cover

1. *Bauera rubioides*

Well known in sheltered, damp situations along the east coast, this shrub has proved extremely adaptable in exposed, full sun positions in Canberra. In such a location, the height is restricted to about 1 m, with a spread of at least 1.5 m.

The species flowers for long periods and is one of the most resistant to the root-rot *Phytophthora cinnamomi*.

Propagation is by cuttings taken at any time of the year.

Frost is not a problem and no pests have been observed.

The shrub appreciates adequate water but will withstand drought. It appears that good drainage is not important.

This hardy species should be used in parks and gardens far more than it is at present.

2. *Brachysema celsianum*

This red pea flower from Western Australia has become well known in cultivation under the name *B. lanceolatum*. In a revision soon to be published, M. Crisp has indicated that this name must be replaced by the name *B. celsianum*, which was published at an earlier date.

Its flowers are not well displayed, but its glaucous foliage and spreading habit make it useful, particularly for park work.

It is frost hardy and resistant to pests and diseases, provided reasonable drainage is available.

Propagation is either from scarified seed or cuttings.

If conditions are suitable, an expected spread of at least 2.5 m can be anticipated, with a height of 1.5 m.



Casuarina nana

3. *Micromyrtus ciliata*

This eastern species is variable and only the semi-prostrate form is suitable for ground cover work. It will spread to 1.5 m and remain about 50 cm high.

The white flowers redden on ageing and the bush remains attractive for many weeks.

It is frost hardy, but requires good drainage. Apart from occasional attack by scale insects, pests are not a problem.

Propagation is from short tip cuttings taken in summer when new growth has started to harden.

4. *Casuarina nana*

One does not normally think of she-oaks as ground covers, but there is at least one species suitable for this type of use. *C. nana* occurs on the South Coast and Southern Tablelands of New South Wales and into Victoria. Rarely more than 1 m high and with a spread of 2-3 m, it is tolerant of a wide variety of conditions.

Propagation is from seed. Until they are established, young plants should be protected from hares and rabbits. Plants are frost hardy.

She-oaks make an interesting foliage contrast whether as ground covers or specimen trees, and more use should be made of the genus in the planning of parks and private gardens. Recently it has been proposed that the majority of *Casuarina* species belong to a

new genus, *Allocasuarina*. If this revision is adopted, then the name of this species becomes *Allocasuarina nana*.

5. *Acacia glandulicarpa*

Several acacias are useful ground covers because of their low-spreading habit. This species is Victorian, and at 1 m high has a spread of over 2 m.

It is spring flowering with a good covering of small golden balls. Propagation is from scarified seed, and some small successes have been experienced from cuttings.

It is not affected by frosts.

It appreciates a well-drained spot in full sun and, as with most wattles, it is prone to borer attack.

6. *Haloragodendron monosperma* (syn. *Haloragis monosperma*)

A native of the Southern Tablelands escarpment of New South Wales, this species is not common in cultivation. It is, however, fast growing, with bright green foliage, cream flowers in the spring, and a suckering habit.

Plants should be spaced at 2 m centres and expected height should be about 1.5 m.

This species is frost hardy and may be grown easily from cuttings. No pests have been recorded, but adequate water and good drainage should be provided.

7. *Grevillea obtusiflora* 'Little Thicket'

This interesting cultivar was introduced to cultivation at the National Botanic Gardens. It reaches 50 cm in height and produces suckers prolifically.

The small, red flowers are insignificant but the plant excels as a taller ground cover.

It appears to be pest free and may easily be propagated from cuttings.

Plants should be planted at 1.5 m centres.

8. *Grevillea paniculata*

Some forms of this Western Australian plant tend to be low and spreading and are suitable for ground covers.

The species has prickly foliage and would be useful for deterring animals or children. In flower, it is a mass of cream, highly scented blossoms, but at other times its fresh, light green foliage is attractive.

Good forms will spread to 2.5 m, with a height of 1.0–1.5 m.

Propagation is from cuttings, no pests have been noted and the species is frost hardy.

A sunny, well-drained position will suit it best.

9. *Melaleuca pulchella*, *M. violacea*

These two mauve-flowered *Melaleuca* spp. from Western Australia may be bracketed

together, as their requirements for cultivation are similar.

Both have forms which are low-spreading shrubs, to about 1 m with 1.5–2.0 m spread.

Both require plenty of water, but good drainage is an advantage.

Propagation is either from seed or cuttings, but to preserve the required form, vegetative material is desirable.

Both species flower in late spring and early summer and appear to be pest free. Both are frost hardy at the National Botanic Gardens.

Care must be taken in selection of the correct form, as more upright types of each also exist.

Small areas between shrubs, between driveway strips or in rockery pockets

1. *Scaevola albida*

All *Scaevola* spp. are useful rockery plants and many are dense enough to be classed as ground covers. *S. albida*, in either white or blue forms, is a close mat which may spread to 1 m and remains mostly low growing, although the blue form may reach 50 cm in height.

It grows readily from cuttings and requires ample moisture and good drainage.

Full sun or semi-shade locations are satisfactory and the species is frost hardy.

Propagate from cuttings. No pests have been noted.

Grevillea paniculata



2. *Ajuga australis*

This species is widespread in south-eastern Australia, and plants do well in full sun and exposed to frosts.

The purplish-blue flowers are borne on upright stems in spring and summer and the plants spread to about 1 m in diameter in four years.

The plant may be propagated from cuttings or root division and appears to be pest free.

3. *Clianthus formosus*

This species needs no introduction to most Australians. Better known as Sturt's desert pea, it is widespread in inland Australia and is the floral emblem of South Australia.

It requires dry, well-drained conditions and, although frost tender, is worth growing as an annual in cold areas.

If scarified seed is sown in July in cold climates, plants may be nurtured in large pots in cold frames until the heavy frosts have passed — say, early September. The advanced plants are then planted in the open garden and covered for the first two weeks. Flowering should start almost immediately.

Liberal application of a well-balanced fertiliser at planting time is an advantage.

Care should be taken not to overwater; drainage must be excellent.

Snails should be guarded against by using bait.

Spacing for mass planting should be no more than 1 m centres.

4. *Pelargonium rodneyanum*

One of the best of the Australian *Pelargonium* spp., *P. rodneyanum* hails from relatively dry situations in the southern mainland States.

It is readily propagated from cuttings and enjoys full sun. It spreads slowly, and as a ground cover, it should be planted at 50 cm centres. The plant is most suitable for rockery pockets.

It is frost hardy and flowers for a long period over the warmer months.

Moderate watering is required and no pests have been noted.

5. *Brachycome graminea*

This species occurs in damp or swampy areas along the coast of south-eastern Australia and in the Tablelands of New South Wales. It spreads rapidly and can be best propagated by root division.

Plants at the National Botanic Gardens are frost hardy and flowers are borne through the warm months and until late autumn.

The little daisy flowers are white or pale blue and no pests have been recorded.

Plenty of water is required for good growth and small plantlets should be placed at 30 cm centres for quick coverage.



Ajuga australis

6. *Triodia irritans*

Despised by many and as far as is known not used in cultivation, this species may be useful as a ground cover for arid conditions of cultivation or as a rockery novelty. The species is commonly known as porcupine grass and is sometimes incorrectly called spinifex.

The plant forms a compact tussock up to 70 cm in diameter, with stiff, grey, pointed leaves and flowering stalks up to 90 cm.

It may be propagated from seed, although germination is not usually good.

Although the species grows in low rainfall areas, it thrives under the better conditions of cultivation. The plant is frost hardy.

7. *Viola hederacea*

This delightful little native violet does best in shady situations with ample moisture. Its purple and white flowers are borne on stalks from 4 to 10 cm long and are seen for most of the year.

It is propagated readily by dividing the stolons and for quick cover they should be planted at 50 cm centres.

No pests have been noted.

NAME MEANINGS

Acacia — from the Greek name for *Acacia arabica*, which yields gum arabic; *glandulicarpa* — from the Latin, *glandula*, a small gland, and the Greek, *carpos*, fruit, possibly referring to glands at the bases of hairs on the pod.

Ajuga — from the Latin, *a*, no, and *jugum*, a pair, possibly in reference to the calyx lobes being equal, not bilabiate; *australis* — from the Latin, southern.

Bauera — after the Bauer brothers, early botanical illustrators; *rubioides* — resembling the madder, *Rubbia*.

Billardiera — after J. J. H. de Labillardiere (1755–1834), a French botanist; *scandens* — from the Latin, *scandere*, to climb.

Brachycome — from the Greek, *brachys*, short, and *kome*, hair of the head, referring to the short pappus hairs; *graminea* — resembling a grass, referring to the leaves.

Brachysema — from the Greek, *brachys*, short, and *sema*, standard, referring to the upright petal at the back of the flower, *celsianum* — after F. Cels, a prominent nurseryman in Paris; *lanceolatum* — from the Latin, *lancea*, lance, referring to the leaves.

Carpobrotus — from the Greek, *carpos*, fruit, and *brotos*, to be eaten; *rossii* — after William Ross, of Stoke Newington, England, who in 1820 raised plants from seed from Tasmania.

Cassia — from the Greek name, *kasia*, for a *Cinnamomum* sp., application obscure; *odorata* — in botany, sweet-smelling.

Casuarina — like the cassowary, *Casuarus* sp., because the drooping foliage was said to resemble the feathers of that bird; *Allocasuarina* — from the Greek, *allos*, strange or other, and the genus *Casuarina*; *nana* — from the Latin, *nanus*, a dwarf.

Clianthus — from the Greek, *kleos*, renowned, and *anthos*, flower; *formosus* — from the Latin, beautiful.

Grevillea — after C. F. Greville (1749–1809), an English patron of botany; *bitermata* — from the Latin, *bi-*, two, and *terni*, three at a time, referring to the leaves, which are divided once and then again into 3; *x gaudichaudii* — after C. Gaudichaud-Beaupre (1789–1854), a French botanist (a natural hybrid, *G. laurifolia* x *G. acanthifolia*); *thelemanniana* — after Thelemann, a German botanist of the early 1800s; *paniculata* — flowers arranged in panicles; *laurifolia* — leaves similar to those of a laurel, *Laurus* sp.; *obtusiflora* — refers to the obtuse limb of the perianth.

Haloragodendron — from *Haloragis* and the Greek, *dendron*, tree, i.e. a tree-like *Haloragis* (*Haloragis* is from the Greek, *halos*, the sea, and *rhagos*, a berry, indicating the locality and appearance of the first species described); *monosperma* — from the Greek, *mono-*, one, and *sperma*, seed.

Pelargonium rodneyanum





Brachycome graminea

Hardenbergia — after the Countess von Hardenberg, a sister of Baron von Huegel, collector of plants in Western Australia in 1833; *violacea* — from the Latin, violet in colour.

Hibbertia — after George Hibbert (1757–1837), a London merchant and patron of botany; *dentata* — from the Latin, *dentatus*, toothed, referring to the leaf margins; *scandens* — climbing.

Kennedia — after Lewis Kennedy (1759–1842), a London nurseryman; *nigricans* — from the Latin, blackish, the flowers are black with yellow on the standard; *macrophylla* — from the Greek, *macros*, large, and *phyllon*, leaf; *rubicunda* — from the Latin, red, referring to the red flowers; *coccinea* — from the Latin, scarlet, referring to the colour of the flowers; *prostrata* — from the Latin, prostrate.

Kunzea — after Gustave Kunze (1793–1851), a German botanist; *pomifera* — from the Latin, pomum, fruit, and *fero*, to bear.

Melaleuca — from the Greek, *melas*, black, and *leukos*, white; the reason for the use of the name is obscure; *pulchella* — from the Latin, beautiful and little; *violacea* — from the Latin, violet in colour.

Mentha — the Latin name of mint; *diemenica* — in botany, of Tasmanian (Van Diemen's Land) origin.

Micromyrtus — from the Greek, *micros*, small, and *myrtos*, the myrtle; *ciliata* — in botany, fringed, referring to the minute, stiff hairs on leaf margins.

Myoporum — from the Greek, *myo*, to shut, and *poros*, pore, referring to its ability to exist in dry areas; *debile* — from the Latin, weak.

Neopaxia — from the Greek, *neos*, new, i.e. a new *Paxia* (*Paxia* was named for F. Pax, a German botanist); *australasica* — in botany, of Australasian origin.

Pelargonium — from the Greek, *pelargos*, stork; and *gonios*, fruit (the fruit is long and slender like a stork's bill); *rodneyanum* — named in honour of Mrs Caroline Riddell (nee Rodney), grand-daughter of Admiral Lord Rodney and wife of Campbell Drummond Riddell, Colonial Treasurer of N.S.W., 1830–56.

Phyla — derivation unknown; *nodiflora* — from the Latin, *nodus*, and *flos*, flower.

Scaevola — from the Latin, *scaevola*, the left-handed, referring to the one-sided, five-lobed corolla; *albida* — from the Latin, whitish.

Triodia — from the Greek, *treis*, three, and *odon*, a tooth, the flowering glume being divided into three lobes; *irritans* — from the Latin, *irrito*, to irritate, referring to discomfort caused by the pungent-pointed leaves.

Viola — the Latin name for violet; *hederacea* — resembling *Hedera*, the ivy.

MELALEUCA MICROMERA



Distribution

Melaleuca micromera is an unusual shrub from the south-east of Western Australia, where it grows on dry, sandy plains and in gravelly habitats. It makes a medium-sized shrub, either low and spreading or compact and upright, when it is described as resembling a small conifer.

Like many *Melaleuca* spp. it is attractive in foliage and flower, but it is unique among them. In fact, it is a distinctive species for any kind of garden on account of its twisting branches.

Growth is dry and slender, easily snapped, though pliant in wind in all situations in the National Botanic Gardens. The lightweight branches are greyish brown and they curve, twist and wave in various directions. Numerous short, fine lateral stems often form feathery tufts, slightly matted.

Specimens in these Gardens are in sheltered positions favouring free growth, in light shade from eucalypts and taller shrubs. The soil is light and well mulched and fed occasionally with a general fertiliser (N, 10%; P, 4%; K, 5%–7%) around each plant.

Isolated plants are upright, 1.5 m high after eight years, and spreading to 1.5–2.0 m across. Plants confined among other shrubs are irregular, reaching along the ground to the front of the border and fitting gracefully into available space. This is an important point in a closely planted border.

The shrubs are winter hardy in Canberra, and in drought years they survived, though growing bare. Bushy growth to ground level was resumed as soon as more watering became available.

The light stems show up looking as if threaded through the minute scale-like leaves, for each leaf has one face pressed closely on the stem. On some stems, continuous foliage gives the effect of a fine, green cord.

Under a hand lens the details of the curious leaves can be seen. They are in whorls of three, roughly shield shaped and for their size quite thick and succulent with one or two dots

— the oil glands. When a few leaves are crushed the glands release a perfume typical of the family Myrtaceae, in which all leaves have these glands.

Most of the year the shrubs are a quiet green, freshened by paler tints in spring when new tips are growing before the flowers are finished.

This is one of the earliest spring-flowering *Melaleuca* spp. in the Gardens, opening, some years, on sheltered branches as early as late July. Early October is more usual, and flowers open for about five weeks, at the tips of most laterals and often massed.

The flowers are as unusual as the leaves and the branching, resembling wattle balls just under 1 cm across. Actually they are 'brush' flowers, as in many *Melaleuca* spp., but rounded; the colour is barium yellow, as matched with a colour chart and recorded also for some wattles.

Seed capsules embedded in the wood remain unopened on the plant for years, and to obtain the seed, a piece of stem can be kept indoors in a bag, the capsules opening in a few days in a warm room. New plants are raised from seed or cuttings, but are not easily bought, as the species is not yet widely known in cultivation.

Cut stems are ornate in decoration and last well in shallow water, gradually drying out quite usefully. One flexible stem alone makes a small arrangement, falling easily into various graceful positions when wedged among small rocks on a pinholder.

This long-lived and trouble-free shrub will become popular for small spaces and is recommended also for growing in tubs or cascading among large rocks or down a slope. It can be trimmed to shape as a small hedge, with plants about 1 m apart.

Melaleuca micromera:

Melaleuca — from the Greek, melas, black, and leukos, white; the reason for the use of the name is obscure;

micromera — from the Greek, micros, small, and meris, part



EUCALYPTUS CAESIA



Gungurru is the Aboriginal name of this colourful, small tree; the meaning, however, is lost and there are few living members of the tribe concerned.* The species is popular in Australian gardens far beyond its granite habitats in south-west Australia, and it is often supplied by nurseries dealing in native plants.

The size is very convenient, the tree only being about 5 m high, extremely slender and with pendulous branches. Other attractions are pink flowers and dark, ruby red young stems¹ overlaid with a white, waxy bloom. Also

Eucalyptus caesia:

Eucalyptus — from the Greek, eu, well, and kalyptos, covered, referring to the calyx and/or petals which form a lid over the flower bud;
caesia — from the Latin, bluish grey, referring to the colour of the leaves

buds, seed capsules and young branches are silvery, enhanced when the plant is in full sun. The bark is an unusual reddish brown and smooth, splitting longitudinally into narrow, tough curls revealing a contrasting green bark beneath.

Normally this eucalypt is unaffected by frost in Canberra and survives drought, though flowers may be absent and no progress made without watering in dry spells.

The leaves seem the least attraction, though blue-green when healthy and silvery when young. They are up to 13 cm long, thick and with a red vein, sparse in number. Unfortunately, they are often eaten by insects and blemished by high-coloured marks in wet winters.

Scale pests increase some years, encouraging sooty mould and attracting ants. The entire tree can be disfigured, and should be watched so that spraying with white oil can be undertaken before the attack spreads too far.

Flowers open from early September, lasting until mid-December with moisture. They are in clusters of three, dangling on long stems on the swaying branchlets and not hidden by foliage. They are quite large, 3 cm across, a fringe of firm stamens around a large, light yelloweye. The colour is soft rose-pink² tipped with pale yellow anthers³ in silvery cups. The seed capsules are shapely, like small, silvery bells.

In 1982, a new subspecies was described as *E. caesia* subsp. *magna*. This rare plant occurs on granite ridges near Merredin in Western Australia. It has larger flowers, fruits and leaves than the normal species and has been in cultivation for some years, known as *E. caesia* 'Silver Princess'. This cultivar name will probably persist as a common name for this fine plant.

Small eucalypts and mallee types can be most ornamental and a number are in cultivation. Their flower colours include good creams, pinks, reds, green or mauve.

The interesting bark of gungurru is also found in several other small eucalypts from granite country in Western Australia. *E. orbifolia* (disc-leaf mallee) is a highly ornamental example, with thick, grey, rounded leaves and large, primrose-yellow flowers.

* Department of Aboriginal Affairs, Canberra.

1. RHS Colour Chart, 1941, ruby red 827; 1966, red-purple 59A.

2. RHS Colour Chart, 1941, carmine rose 621/1 for example; 1966, red 58D for example.

3. RHS Colour Chart, 1941, chrome yellow 615/1-2; 1966, yellow-orange 16C.

BORONIA PINNATA



Distribution

Boronia pinnata:
Boronia — after J. Borone
(1769–94), an Italian plant
collector; *pinnata* — from the
Latin, pinna, a feather,
referring to the divided leaves

Many gardeners, whether native plant enthusiasts or not, aim to grow precious boronias, and specially the brown *Boronia megastigma*, which is not the easiest to keep.

Boronia pinnata, shown here, is a tougher species and can be long-lived in a sheltered spot and with light trimming.

This *Boronia* is a beautiful, waxy flowered, delicate shrub, not sweetly perfumed but with aromatic leaves which, when bruised, yield a perfume that may not appeal to all. An interesting scent is noticed on smelling the flower, but it does not scent the air.

It is one of the common *Boronia* spp. of sandstone country in New South Wales up to lesser mountain levels. It grows in dry sclerophyll forests and in well-drained sandy heaths, where, crowded among other shrubs, it can be over 1.5 m high, slender and arching.

Occasionally specimens are found on exposed coastal heathlands, where they develop a low, spreading form. It has been found that these specimens retain this form in cultivation and make fine rockery specimens.

The species varies and can be very soft with weeping tips and pale mauve flowers¹, occasionally white. A slightly more robust and upright form is often seen, with stems or leaves tinged purple and with light purple flowers.² During August the clear, bright colours are seen from a distance.





Boronia pinnata

As *Boronia pinnata* is very similar to several other *Boronia* spp., with slight differences such as fine hairs on young growth, it was formerly recorded as growing in other eastern States. In present classification it is considered a New South Wales species.

In the National Botanic Gardens, old specimens have survived droughts and hot winds, which may cut them back, but nearby growing shrubs cast shade and the shrubs have withstood frosts.

The tips arch, and bushy growth is maintained with sprinkler watering when necessary and with light dressings of a general, low-phosphorus fertiliser.

Younger examples in partial shade with deep light soil over sandstone have never had a drought check and have grown rapidly. They are graceful, upright, arching shrubs of more than 1 m, leafy to ground level.

All parts of the plant are delicate, hairless and waxy, easily broken or spoiled by intense sun or strong winds. A setting among rocks is useful for keeping the root area cool. If it is felt that no position in the garden is sheltered enough, it is possible to grow the shrub in a tub or large pot, moved into the shade as necessary.

It was as pot plants that *Boronia* spp. were first widely grown in Europe after discovery.

The plant form may be low or spreading, encouraged, if desired, by trimming.

The foliage of a sheltered plant is ornamental and ferny, light to mid green. The leaves are up to 25 mm long, opposite, and with several pairs of widely spaced leaflets.

Flowering starts early September in Canberra and can last until early December; it is at its best throughout October. The flowers are clustered on slender stems, roundish buds opening to cups about 1 cm in diameter and of four pointed petals. The quality is waxy and translucent; the colours, pure hues and tints.

Some seed sets in Canberra; however, cuttings are best used in propagation, taking half-ripe tip growth in early summer or later.

While some Western Australian species of *Boronia* may be grown readily from seed, the eastern species are generally difficult and more experimental work is required to solve this germination problem.

Boronias are generally long-lasting as cut flowers, and by taking short sprays for the house this species is given the little trimming it needs to avoid bare wood.

1. RHS Colour Chart, 1941, mauve 633/2-3; purple 75C.
2. RHS Colour Chart, 1941, orchid purple 31/1-2; 1966, red-purple 72B and C.

HAKEA VERRUCOSA



Distribution

This *Hakea* species is an interesting shrub from open, sandy and gravelly habitats in Western Australia, and is little known in the gardens of eastern Australia. Its attractions are winter flowering and compact healthy growth of medium size. It was introduced to the National Botanic Gardens in 1963.

Plants raised from seed were planted in light soil in full sun near trees, and during drought years they merely hung on. Steady growth began when sprinklers were installed and later bark mulches were laid down.

These developed into upright, rigid shrubs to 2 m, with several thick main branches at ground level. These branched densely at short intervals, aided occasionally by frost killing a few half-ripe tips, acting as light trimming. In some Canberra suburbs it would be advisable to cover young plants on winter nights. Hessian can be supported on stakes, clear of the plant, for the cold reaches any part of the plant where the hessian rests.

The leaves are thick and spine-like, up to 6 cm long, resembling those of other 'needle' *Hakea* spp. and are very healthy, impervious to attack by most pests and diseases. A safe garden position should be chosen and the species makes an excellent barrier as a lightly trimmed hedge to 2 m high if desired.

In general effect the foliage is pleasant, with a healthy light green colour and lighter tip growth in summer and autumn.

Plants can flower while young and a specimen was seen to flower at 30 cm high when about a year old. On a watered plant the season can start in late April and last until September; it is at its best during a long period between June and August. In extreme cold with dryness the display is sparse or absent.

The shrubs are massed with delicate flowers on fine pedicels, hanging in axillary racemes. The flowers are narrowly tubular with long styles and are scentless and waxy. Bees are frequently seen visiting the flowers.

The flower colour is subtle and difficult to record, as in many other members of the plant



Hakea verrucosa:

Hakea — after Baron von Hake (1745–1818), a German patron of botany; *verrucosa* — from the Latin, verruca, a wart, referring to the warted fruits

family Proteaceae. It is a suffused mixture of ruby reds and light purples which may change to cold mauves in a severe, wintry spell.

A few woody fruits are seen in some years. Apart from seed, half-ripe cuttings can be used in propagation. The species is not yet sufficiently well known to be in plentiful supply, but can be bought from some specialist nurseries. No special soil requirements are known, but the plants should be put in sunny positions for good flowering.

The shrub has recovered from drought and also from spells of bad drainage, as during a rainy period when the root-rot fungus *Phytophthora cinnamomi* caused some die-back. This had a similar trimming effect to frost and did no permanent damage to established plants.

This is a useless cut flower, not living in water. The stiff pieces are hard to arrange and the colour, so bright in the winter garden, seems cold indoors.

1. RHS Colour Chart, 1941, ruby red 827/3 or Indian lake 826/3 with styles of magenta rose 027/1; 1966, red-purple 61A-B with styles red-purple 64C.

MELALEUCA THYMIFOLIA



Distribution

From the many small melaleucas of garden value, *Melaleuca thymifolia* is chosen for its frequent flowers and general adaptability for a small garden or public park. It comes from New South Wales and Queensland, in mild, moist areas and light soils, but has not needed protection in the National Botanic Gardens and has survived droughts. In extreme cold, exposed plants can look chilled.

Watered shrubs are luxuriant and full of long, straight tip growths. Really heavy watering or high rainfall brings beautiful large, soft flowers in profusion, but plants fall apart, revealing tough papery branches. The branches recover, however, by curving inwards again and pruning is seldom necessary to keep a shapely plant.

In the National Botanic Gardens, the larger plants of this species may be over 1.5 m high in a very enclosed position among taller shrubs. Others, in light soil and well watered, are definite ground covers which may reach 3 m across and under 1 m in height.

Specimens in drier conditions in full sun, as on a lawn, may form compact small shrubs of 1 m at ten years old, tending to develop short trunks. Growth is in tufts of thin stems, more towards the branch ends, and the bare wood has many clusters of old seed capsules.

It is long-lived and recovers well from drought and other setbacks, though exposure to strong winds can cause a permanent lean, or plants may even be dislodged.

Many specimens in the National Botanic Gardens, from several origins, are showing interesting variations in shape and size, indicating that treatment can be aimed at having the type of plant desired. It could be used in a rockery, in group planting in public parks, or for extensive ground covers lightly trimmed.

The plant is entirely hairless, with delicate, reddish young stems and blue-green foliage, both spicily aromatic when bruised. The simple leaves are about 1 cm long, in even pairs pointing upwards close to the stems.

On ripe wood, below the new tips, are small

clusters of stemless flowers, rich mauve in spring and summer and bluish purple in early winter in Canberra. They are the 'claw' type of flower, in which the stamens are joined lower down and are free towards the tips, where they curve inwards. They are like five feathered petals of firm substance.

Flowers often open eight months of the year, freely around late November and then slowly till autumn when another flush occurs. After this, flowers open unevenly, depending on the weather, and finally cease towards mid-winter, full of buds for next spring.

Propagation is not difficult from seed or cuttings and the species is generally obtainable from nurseries dealing in native plants. Seed can be collected by taking mature capsules and keeping them indoors to open in a bag, or cuttings may be taken from the plentiful tip growths in December or January.

This charming shrub seems to thrive in any soil, with little attention besides trimming, and is free from pests and diseases.

Melaleuca thymifolia:
Melaleuca — from the Greek, melas, black, and leukos, white; the reason for the use of the name is obscure;
thymifolia — from the Latin name for thyme, and folium, leaf, i.e. leaves like those of thyme



VIMINARIA JUNCEA



Distribution

Viminaria juncea:
Viminaria — from the Latin,
vimen, a pliant twig;
juncea — from the Latin,
juncus, a rush, i.e. resembling
a rush



Native broom is a unique species, being the only *Viminaria* known, and it grows wild only in Australia. It occurs in moist, temperate parts of most States, not in the Northern Territory or in areas as dry as the Australian Capital Territory. In swamps it can be extensive, a tall, loose shrub where crowded.

It can be kept as a shrub amenable to trimming, but is most distinctive kept to a single trunk, when it reaches 6 m high. As a shrub, it resembles the introduced broom (hence the common name), with smaller flowers, but is highly superior. It is brighter in appearance and, unlike broom, will grow after setbacks, thus it is long-lived.

As a small tree, it is upright and the slender trunk has a dark, fibrous bark. This contrasts with the crown of soft green tints, a waving mass of slender branches which are bright grassy green while young. The branches are long, in sprays, very smooth and extremely pliant, standing up well to storms and not angular.

Ordinary leaves are absent, except in seedlings and occasionally on young stems, and the tree is generally thought of as leafless. The leaves are reduced to phyllodes as in some wattles.

In *V. juncea* the phyllodes are up to 30 cm long, stringy, smooth and flexible, a fresh green and always healthy.

Very rapid, clean growth in almost any soil is a great advantage of the species, which can be put to any garden use in sun or shade. It is tough enough for planting in public gardens and quite hardy to frost in Canberra.

An older specimen in the National Botanic Gardens survived droughts, though growth receded to the top of the tree, and it withstood storms in a fairly open spot. When 6 m high it lost three branches in the August 1965 snow-fall, and further die-back possibly came through root-rot (*Phytophthora cinnamomi*), which was known to be in the area. After trimming, and with controlled sprinkler watering, this tree grew bushy again.

In November the branches become thickly lined with small, lemon-yellow¹ pea flowers 1 cm long, with light clover scenting from a large mass of plants. The season can last until mid-December if cool and moist.

Seed is plentiful — one small bean per pod — and is the easy means of propagation, making this species fairly readily obtained from native plant nurseries, though it is not yet widely known. Seed should be scarified or treated with boiling water prior to sowing (refer *Growing Native Plants* No. 2). Autumn would be the best season to put out new plants in Canberra.

This is not a useful cut flower.

1. RHS Colour Chart, 1941, lemon yellow 4; 1966, yellow 13A.

CASSINIA QUINQUEFARIA



Distribution

When growing wild, tattered and wispy with an outline of flimsy small foliage, this shrub of the daisy family, Asteraceae (or Compositae), is generally classed as rubbish if noticed at all. It is no garden plant even to most native plant enthusiasts, but in cleared surroundings with some trimming and watering two attractive features emerge.

The feathery flower clusters, stunted and dingy when wild, become large and shapely in cultivation, and the foliage is aromatic. The shrub is easy to grow, making very rapid progress in most soils unless over-wet.

There is no very familiar common name and the species is not in old books showing native plants tried out in Europe soon after discovery. In 1817 its botanical description was published but popular accounts of it are not to be found.

In the dry forests of eastern New South Wales and south-eastern Queensland the species is very common where found. It occurs at the coast, up to 1.5 m high among sand-dune shrubbery, but is more evident inland. It is found in rocky, arid situations and in moister patches, often in tumbled down thickets over 3 m high.

The shrub is common on Canberra mountains, and continues to survive along dusty outer roadsides. Plants can be spotted in summer by their terminal flower clusters of dull greenish and straw colours.

Many plants spring up on cleared bushlands, growing well in the open to form upright, dense and leafy shrubs 2 m high after several years. They then tend to deteriorate and become bare at the base.

With age, wild shrubs on better sites may develop a few main branches, even a short trunk with dark, toughly fibrous and almost latticed bark. Shrubs on drier sites may have numerous very thin stems. The wood is hard and brittle, with thin, dark and rough bark. Extremely thin, weak growth which dies out in dry spells is a conspicuous feature of this shrub.

In good or poor conditions the branches are short-lived, becoming bare from the base and



Cassinia quinquefaria:
Cassinia — after Count Henry Cassini (1781-1832), French botanist and writer on the family Compositae;
quinquefaria — in botany, five-rowed, possibly referring to the number of florets in a head

forming a litter of dead stems over the years. As the basal shoots grow long and straight, generally there are numerous thin, strong sticks lying around untended plants and these are good as light garden stakes.

In nature the shrubs are indestructible, with the frames under constant replacement as new growth is made after only light rains. New shoots spring oddly anywhere on the plants, leading to erratic plant shapes, more or less upright, sparse or bushy. This infers that the shrub can be trimmed freely, and can hardly be spoiled by wrong treatment. The aim is to keep a plant leafy and shapely by cutting out old wood.

The leaves are 3-6 cm long, 1 mm wide, with revolute margins, and are slightly sticky in a damp atmosphere. Though dull and drooping in the wild, the foliage on trimmed and watered plants is soft and feathery, pine green with a varnish-like shine.

The aroma noticed on brushing past the plant resembles a faint copy of the highly perfumed *Calomeria amaranthoides*, the 'incense plant' of the family Asteraceae. This

biennial from Victoria and New South Wales has been in overseas glasshouses since first discovery and *Cassinia quinquefaria* might have the same pleasant use, the scent being more noticeable in a damp atmosphere.

The scent of the flowers when fully out on a damp midsummer day may be too strong for some senses, but is generally pleasant.

Flowers are the main attraction of the cultivated shrub — delicate feathery clusters all over a shrub growing in the sun. Shaded plants may have taller, arching branches tipped with large, graceful clusters of flowers, as on the banks of the rainforest gully at the National Botanic Gardens.

Pointed, green buds appear in December and open in January and February to small heads of tiny flowers which catch the eye of visitors. Though without bright colour, they are attractive due to a slight metallic sheen. When magnified this is seen to be due to shiny papery scales around each head of flowers.

The straw-tinted flowers pale after seeding, but are still decorative, for the clusters, though very fragile, are ever-lasting. They hold long into a calm winter, finally turning dark and falling into decay — in early spring in some mild years.

As a cut flower, the species is more useful than might be imagined, with a use similar to that of perennial *Gypsophila* or *Statice*, but more shapely. The featherweight stems are easy to arrange in large or small displays, in

deep or shallow water. There they can be left to dry out for later use, though the leaves drop off. The spicy aroma hangs around them for a long time.

The species is not yet for sale, but plants can easily be acquired and handed round by gardeners who discover them in their new gardens. Small plants move easily in damp conditions and can be put in sun or shade. They are useful for any garden purpose, but especially for rapid fence cover or a soft hedge. They are less suitable where bold specimens are wanted, as on a lawn, and would become dusty and dishevelled in city surroundings in public areas.

Disorders seen on wild plants include a small, yellowish leaf gall, seen under a microscope to contain mites, and affected stems should be cut off.

The brittle stems also break occasionally in storms. Several inches of snow in Canberra in 1965 also caused breakage. The only effect of these setbacks was to add to the litter of sticks, and new suckers and seedlings were plentiful.

Cassinia spp. are tall shrubs of South Africa (1–2 spp.), New Zealand (5 spp.) and Australia (c. 18 spp.). All have stiff, brittle stems. Four species other than the one discussed here occur in the Australian Capital Territory, but are less common. Some species are showy garden subjects with rounded or flatter flower clusters, white or yellow, and are popular with native plant growers.



Cassinia quinquefaria

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Back cover

Hibbertia scandens:

Hibbertia — after George
Hibbert, a London patron of
botany; *scandens* — from
the Latin, *scandere*, to climb
(tendency to climb)

Front cover

Brachysema celsianum:

Brachysema — derived from the
Greek, *brachys*, short, *sema*,
standard (alluding to the pea
flowers); *celsianum* — after
F. Cels, a prominent nurseryman
in Paris



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